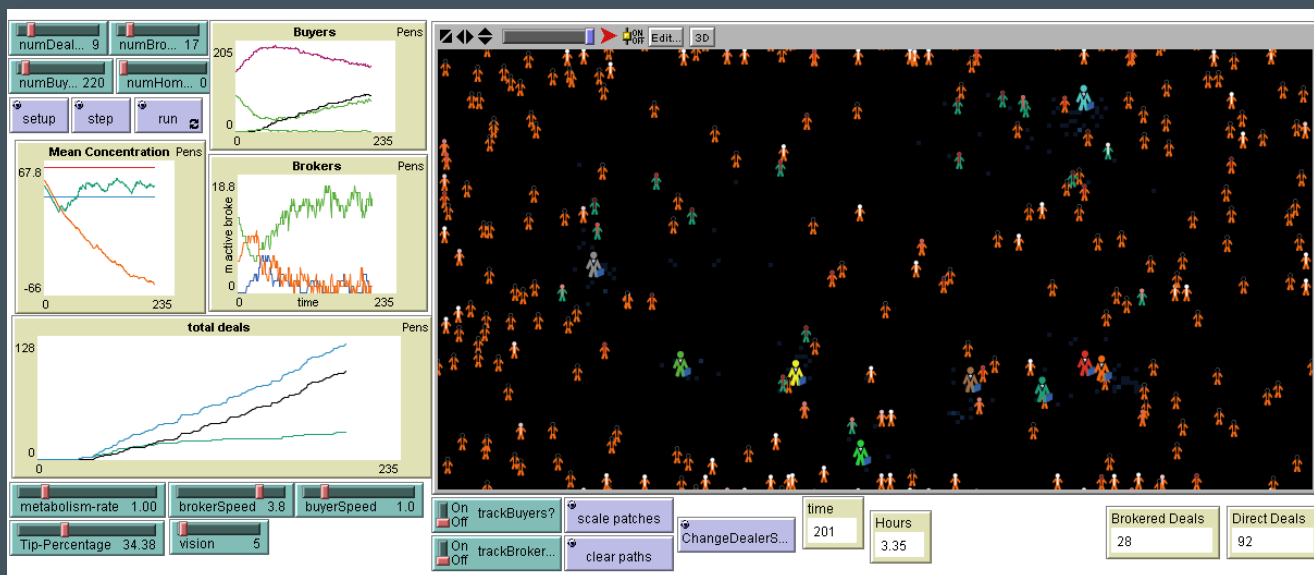


EXHIBIT 31

Modelling Local Heroin Markets



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Dept. of Anthropology
Case Western Reserve University



COLLEGE OF
ARTS AND SCIENCES

CASE WESTERN RESERVE
UNIVERSITY

NIH, NIDA: DA09232, DA06016, & DA019476
NSF, SBE, Cultural Anthropology: 0951501

For My Talk...

1. Present & discuss the data we are collecting from heroin users about local heroin market transactions
2. Describe how we plan to use the data to simulate demand for heroin (create a real-time forecasting model)

My Research...

I began doing research with heroin users in 1994 (Denver, CO.)

- ✓ Ethnographic & survey-based studies with drug users*
- ✓ Ethnography of heroin dealing (Junkie Business, 2006)
- ✓ Computational models of drug markets (2005-Present)
- ✓ Came to CWRU in 2008
 - My research focuses on illegal drug markets

* I have researched: crack cocaine, methamphetamine, Rx drug users, “club drug,” inhalant, & “study drug” users

Ethnographic Research

Overview

1. The hallmark of cultural anthropology
2. Open ended interviewing & participant-observation techniques (i.e., fieldwork)
3. Requires developing rapport with participants
4. Collecting & verifying – accounts, beliefs, and observed behaviors *over time*
 - Analytically iterative

Ethnographic Research

Ethnography as a “way of thinking”

- The research must be respectful, empathetic & neutral (i.e., suspend moral judgments)
- The role of “professional stranger” (part scientist, part friend)
- “One-down” positioning, participant is expert

Ethnographic Research

Challenges of doing fieldwork with **active drug users**...

1. Can present complicated IRB issues: consent, subject fees, confidentiality, data protection, etc.
2. Requires training in participant relations / interactions (i.e., how to treat participants; “One-down” positioning)
3. Subject recruitment, retention, & management issues may take extra time (i.e., understanding addiction)
4. **Must suspend moral judgments** (not for everyone)

Ethnographic Research

Combining ethnographic & survey research...

Ethnographic research
(In-depth, detailed, micro-level perspective from users)



Survey research
(larger sample, macro-level perspectives & patterns)

The Research Studies

NSF Study (2008-2012)

- Heroin purchasing & sales
- Heroin users, Cleveland area
- BCS-0724320

- Participants (N=37)

- Ethnographic methods only
- 2-6 interviews per participant (N=127)
- Heroin use history, current use, health behaviors, treatment, heroin market dynamics
- *N ≈ 90 observations*
- Fieldnotes (N=113)

NIH Study (2009-2016)

- Modeling drug market
- Methamphetamine users, Akron area &
- Heroin users, Cleveland area
- DA025163

- Participants (N=190)

- Ethnographic & survey methods
- Ethnographic sample (N=50)
- Survey (N=140) (N=97)
- Survey Data: Heroin use, access, sales, brokering behaviors

NIH Sample

- Recruited from Free Clinic's syringe exchange program (W. Side), 9-Noon
- Alternate month interviewing
- Survey 30-45 min., \$10
- One-shot interviews, no follow-up

Demographics: (N=97)

68% Male

32% Female

76% White

22% Hispanic / Latino

1% African American

1% Native American

77% House or apartment

7% Homeless

Sources of Income:

57% Informal work (\$1137)*

30% Other illegal activity (\$1607)

29% Legally employed (\$1713)

24% Drug sales (\$821)

13% Disability (\$836)

35% < High school

40% High school

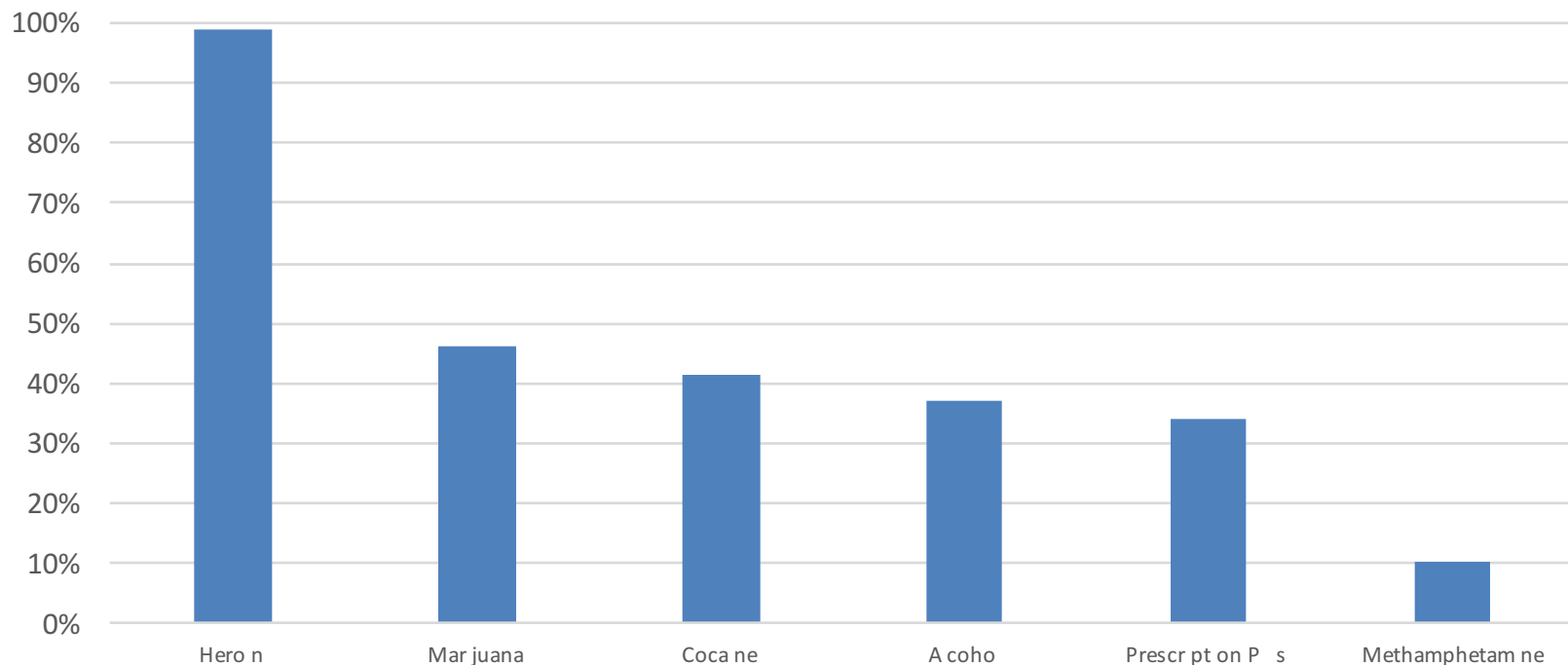
22% > High school

NIH Sample

- Recruited from Free Clinic's syringe exchange program (W. Side), 9-Noon
- Alternate month interviewing
- Survey 30-45 min., \$10
- One-shot interviews, no follow-up

Demographics: (N=97)

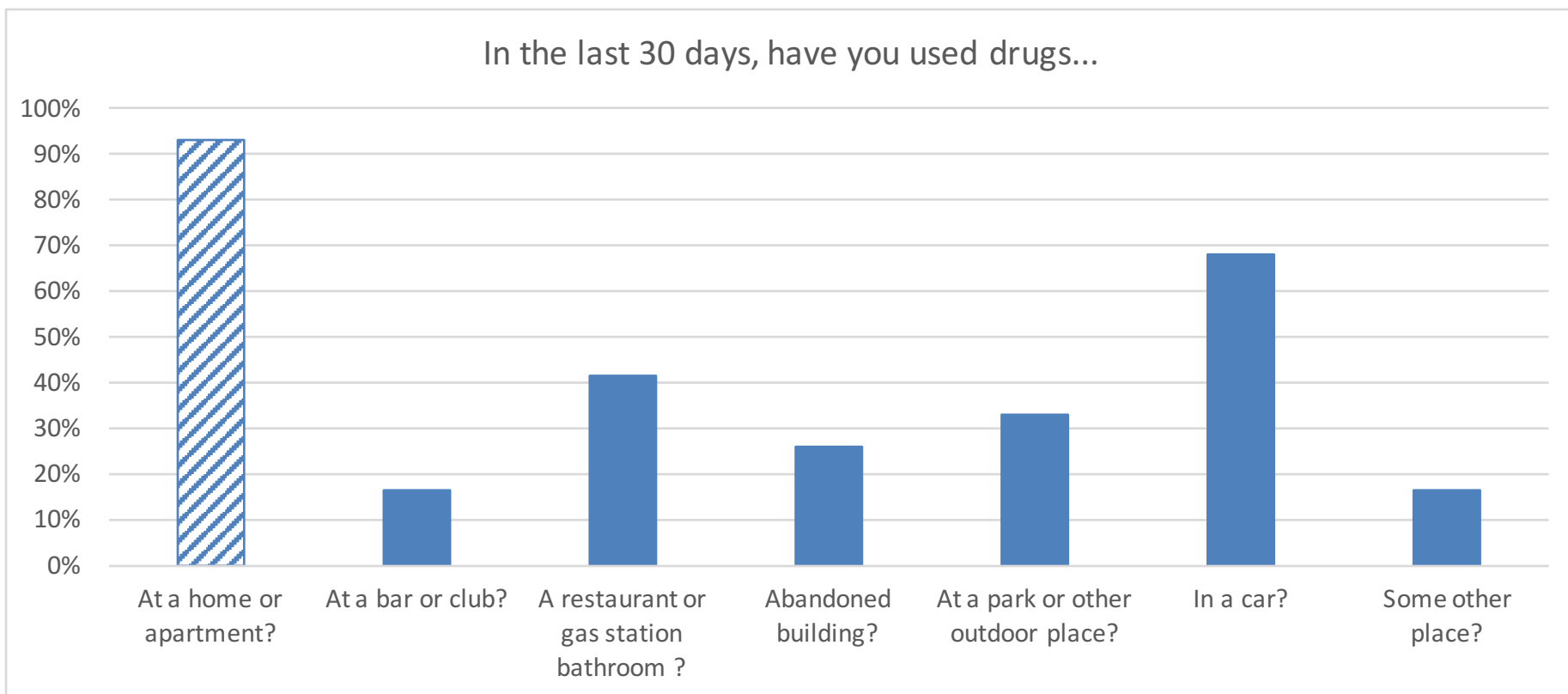
Drugs used in last 30 days



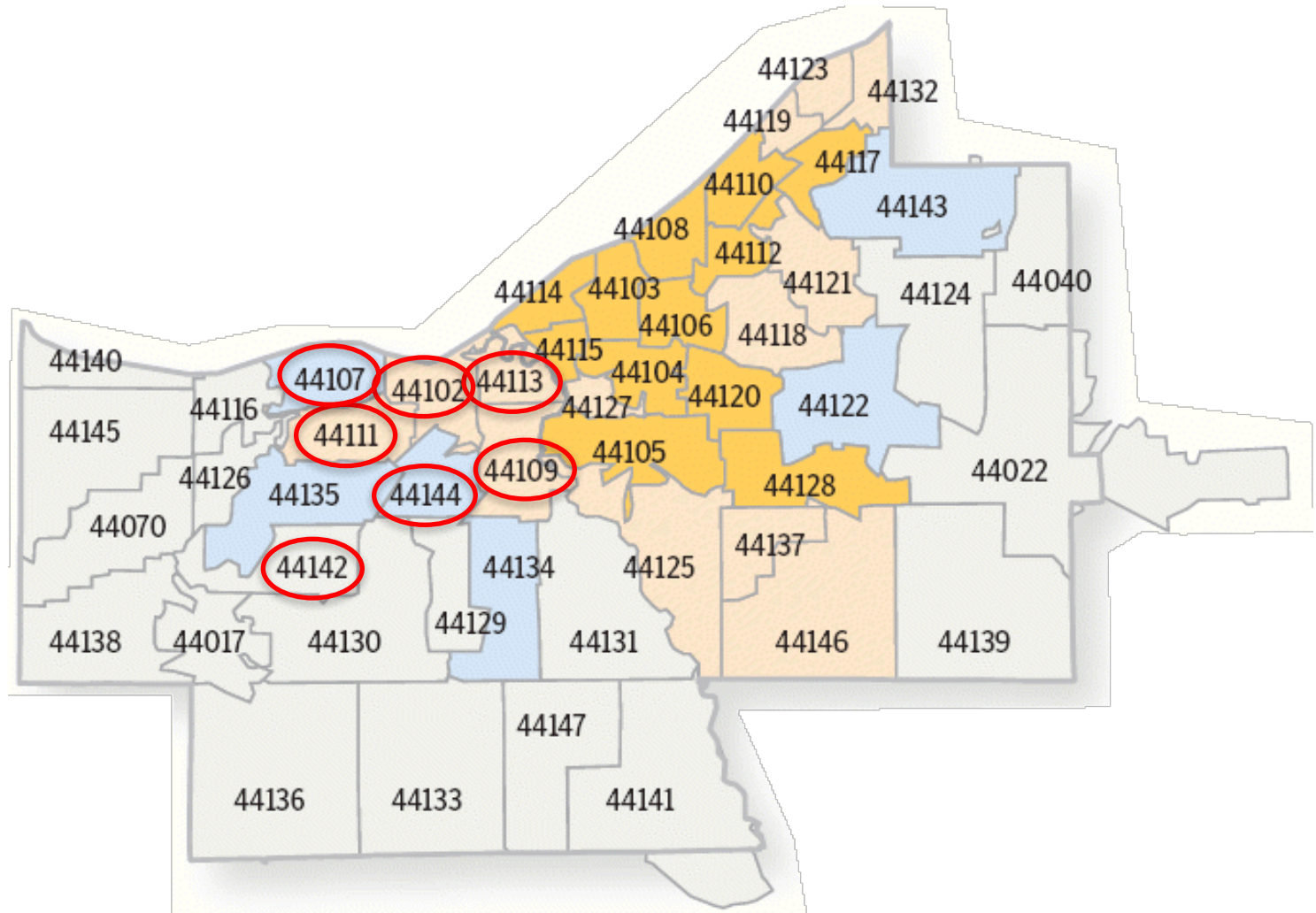
NIH Sample

- Recruited from Free Clinic's syringe exchange program (W. Side), 9-Noon
- Alternate month interviewing
- Survey 30-45 min., \$10
- One-shot interviews, no follow-up

Demographics: (N=97)



NIH Sample: zip code of residence



Heroin (what you need to know)

- **Heroin is not new...** synthesized from morphine in 1874 (10X more powerful than morphine)
- Extremely addicting: people become dependent in 1-2 wks. of consistent use
- People who are addicted experience: 1) tolerance to the drug & 2) withdrawal if they stop using
 - Withdrawal (“sickness”) starts 24 hours after stopping use, lasts for 2-wks, is a debilitating condition

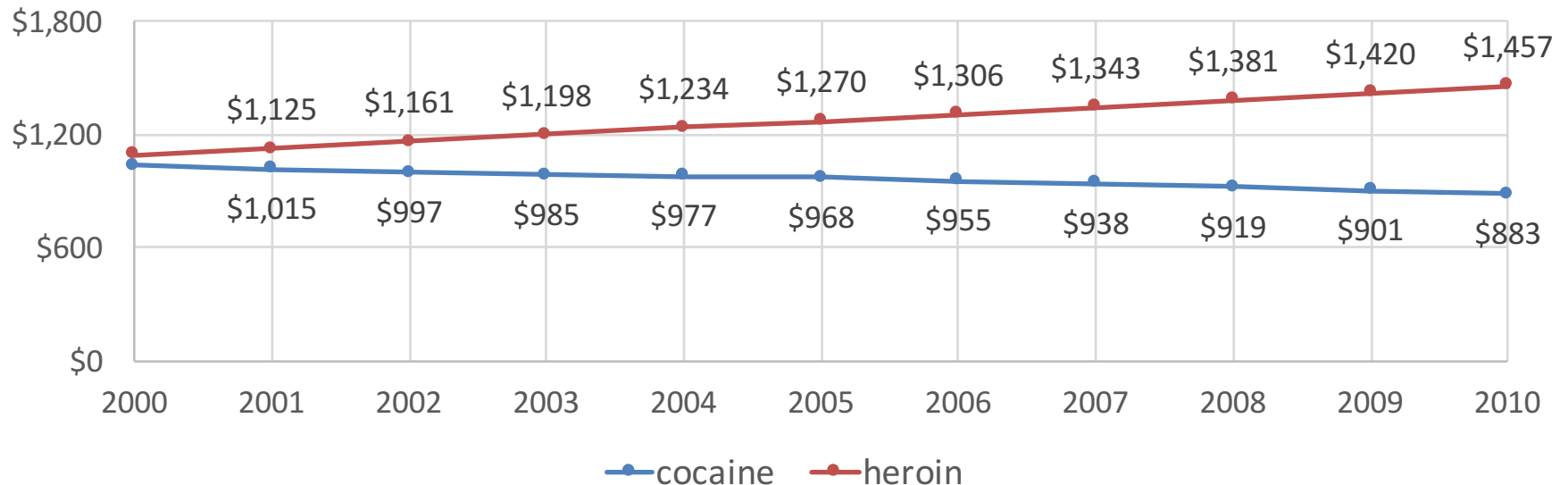
Heroin (what you need to know)

- When on the drug, many people who are dependent are completely functional (like taking medicine)
- When heroin addicts use heroin often they are not getting “high,” they are simply “staying well”
 - ✓ People addicted to heroin are always “on the clock” for their next use (E.g., drug habit)
 - ✓ Heroin and ways to acquire it quickly becomes **the center** of an addicts life, i.e., the first thing they think about
 - ✓ Heroin addiction becomes a lifestyle (E.g., “The Life”)

Heroin – economics

- ✓ The global trade in illegal drugs **US\$ 45 billion – 400 billion**
 - 20-25 billion – coffee / tea
 - 100 billion – textiles
- ✓ Drug spending in the US...

Average Monthly Expenditures: cocaine vs. heroin (2000-2010)



Source: Office of National Drug Control Policy (2014), What America's Users Spend on Illegal Drugs (2000-2010).

Heroin – economics

- ✓ Heroin price is inelastic (increased price does not reduce demand)
- ✓ Heroin is expensive (1 gram = \$120 for gram)
 - 1 gram of gold = \$40
- ✓ Daily heroin users spend 60-72% of their monthly income on heroin consumption¹⁻³
 - Cash is the number one commodity exchanged for heroin³
- ✓ Heroin users often report spending less than they report using⁴

[1] Roddy, J., Steinmiller, C.L., Greenwood, M.K.: Heroin Purchasing's Income and Price Sensitivity. *Psycho-Addict Behav.* 25(2), 358-364 (2011)

[2] Roddy, J., Greenwood, M.K.: An Economic Analysis of Income and Expenditures by Heroin Using Research Volunteers. *Substance Use and Misuse*, 44, 1503-1518 (2009)

[3] Needle, H.R., Matisoff, A.R.: Drug Procurement Practices of the Out of Treatment Chronic Drug Abuser, *National Institute on Drug Abuse, NIH Publication No. 94-3820* (1994)

[4] Johnson, B.D., Goldstein, P.J., Prebber, E. et al.: Taking Care of Business: The Economics of Crime by Heroin Abusers, Lexington Books, Lexington, MA (1985)

Why Model Heroin Markets?

INSIDE



**Clinton Denies
Lewinsky
Allegations:
'We Did Not Have
Sex, We Made
Love,' He Says**

Page 4A



**Educators Praised
As U.S. Kids
Lead World In
Schoolyard
Shooting Accuracy**

Page 2A



the ONION®

SATURDAY, JANUARY 10, 1998

AMERICA'S NEWS SOURCE

★ ★ ★ 75 CENTS

Drugs Win Drug War

WASHINGTON, DC—After nearly 30 years of combat, the U.S. has lost the drug war.

Drug Czar Barry McCaffrey delivered the U.S.'s unconditional surrender in a brief statement Friday. "Drugs, after a long, hard battle, you have defeated us," he said. "Despite all our efforts, the United States has proven no match for the awesome power of the illegal high."

"In retrospect," McCaffrey added, "this was not a winnable war."

McCaffrey then handed over power to *High Times* magazine editor Steven Hager, who will head the new U.S. Office of Drug Policy, replacing the now-defunct DEA.

"We must all get behind drugs now," outgoing DEA Chief Thomas Constantine said. "I recommend we all get really, really baked."

With the defeat, drugs will begin a full-scale occupation of the vanquished U.S. Massive quantities of crack, heroin, PCP, LSD, marijuana and other drugs will flood the nation legally, saving America's estimated 75 million drug users billions of dollars on their yearly drug budgets.



U.S. Drug Czar Barry McCaffrey ceding power to nation's stoners.

Street gangs, working in conjunction with Colombian coke lords, will assume leadership of America's inner cities, and federally backed marijuana farms are expected to begin appearing throughout the rural Midwest and Northern California by the end of the year.

Drug kingpin Amado Fuentes said it was "inevitable" that the U.S. would surrender. "We

knew we would eventually win this war," Fuentes told reporters from his impenetrable Mexico City palace. "America's relentless campaign of anti-drug slogans, TV public-service announcements and elite elementary-school D.A.R.E. forces were a formidable enemy in this war. But in the end, my well-armed and well-financed army was victorious."

Killer Robots Storm Home Of Bill Gates' Childhood Bully

SEATTLE, WA—Walter Conrad, a 46-year-old sporting-goods retail manager, was assaulted in his home by an army of killer Microsoft robots Friday.

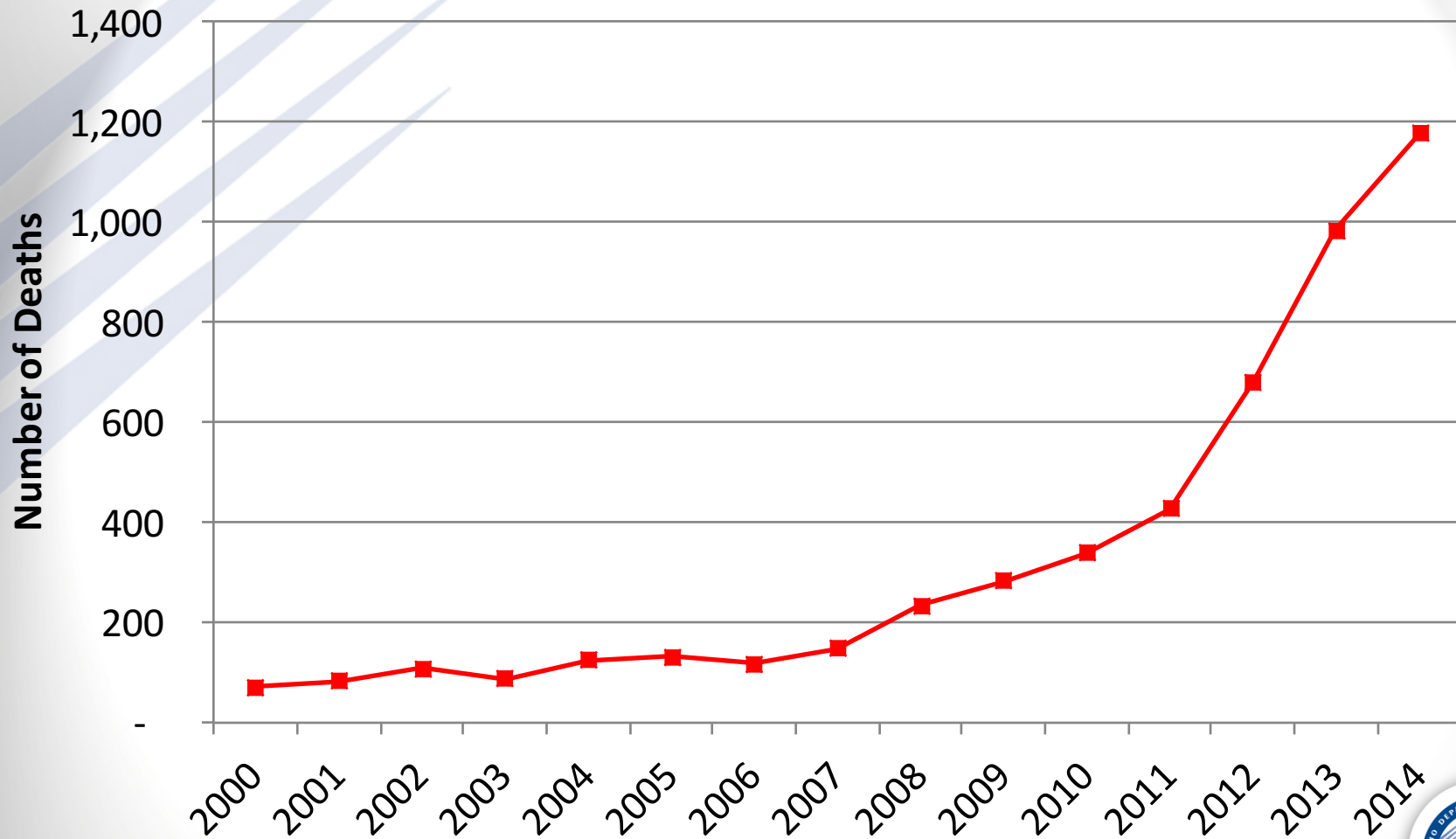
Conrad, who had tormented and teased Microsoft CEO Bill Gates when the two were in junior high school together, suffered minor injuries in the attack. He sustained an estimated \$120,000 in property damage.



Bill Gates

(Onion, 1/10/1998)

Unintentional Drug Overdose Deaths of Ohio Residents by Heroin, by Year, 2000-2014^{1,2}



¹Source: ODH Office of Vital Statistics

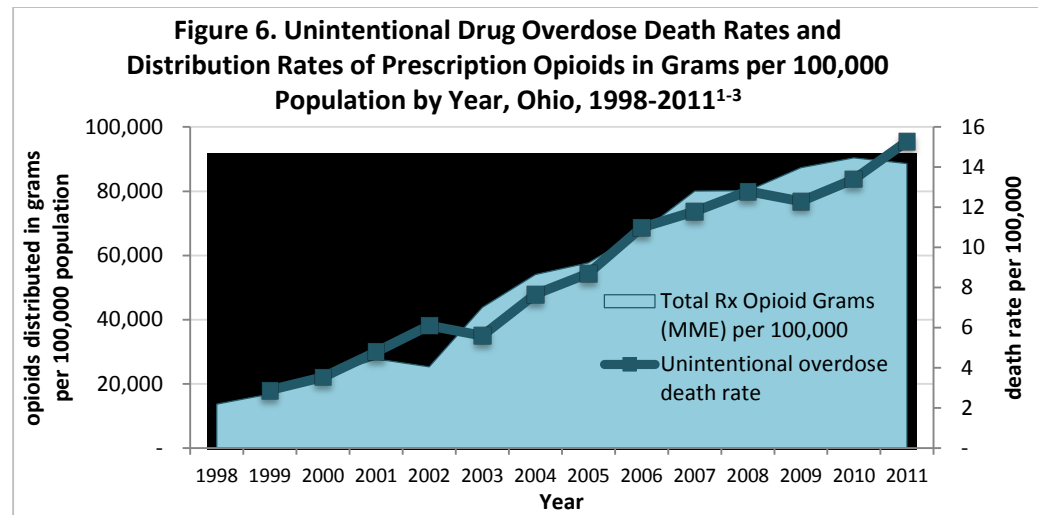
²Multiple substances are usually involved in one death



Heroin Markets & Heroin Trends...

What is different about the current trend in heroin use?

- The problem: large populations of people are *addicted* & require access to opiates
- Rx opiate meds. trends have exponentially increased the potential **demand** for heroin



Ohio Dept. of Health
2014

What is different about the current trend in heroin use?

- The problem: large populations of people are *addicted* & require access to opiates
- Rx opiate meds. trends have exponentially increased the potential **demand** for heroin
- The outcome: Many people who used Rx opiates (for pain or recreation) switched to heroin...*why?*

What is different about the current trend in heroin use?

1. Rx opiate users believe heroin & Rx opiate meds. are the same thing...

- The attitude: “If I use Oxys., I can use heroin, what’s the difference?”
- Both are opiates & both are effective at killing pain, heroin better at this

What is different about the current trend in heroin use?

2. Making Rx opiates = heroin has made heroin more “socially acceptable”

- The “risks” associated with heroin diminish (e.g., “Oxys. are dangerous, I can use that: heroin is dangerous, I can use that”)
- People traditionally afraid of heroin (namely, the white middle-class) are no longer afraid
- Traditional barriers (stigma, fear, danger, injecting) are no longer obstructions to use
- *Heroin is now a “party drug” (mainstream)*

What is different about the current trend in heroin use?

2. Making Rx opiates = heroin has made heroin more “socially acceptable”

- Ohio Attorney General Mike DeWine:

"Heroin has lost its stigma as a poisonous, back-alley drug. There's no psychological barrier anymore that stops a young person or an older person from taking heroin. There's no typical [heroin user]. It has permeated every segment of society in Ohio."

* CBS News – Heroin in the Heartland 12/31/15

What is different about the current trend in heroin use?

3. (not different) Heroin is much easier to acquire than & Rx opiates...

- Heroin is cheaper? (\$10 bag vs. \$25 pill *street*)
- Heroin is easier to acquire
 1. Heroin does not require a prescription, visiting a doctor, or access to a doctor
 2. Heroin has never been scarce

3. The market is easy to access

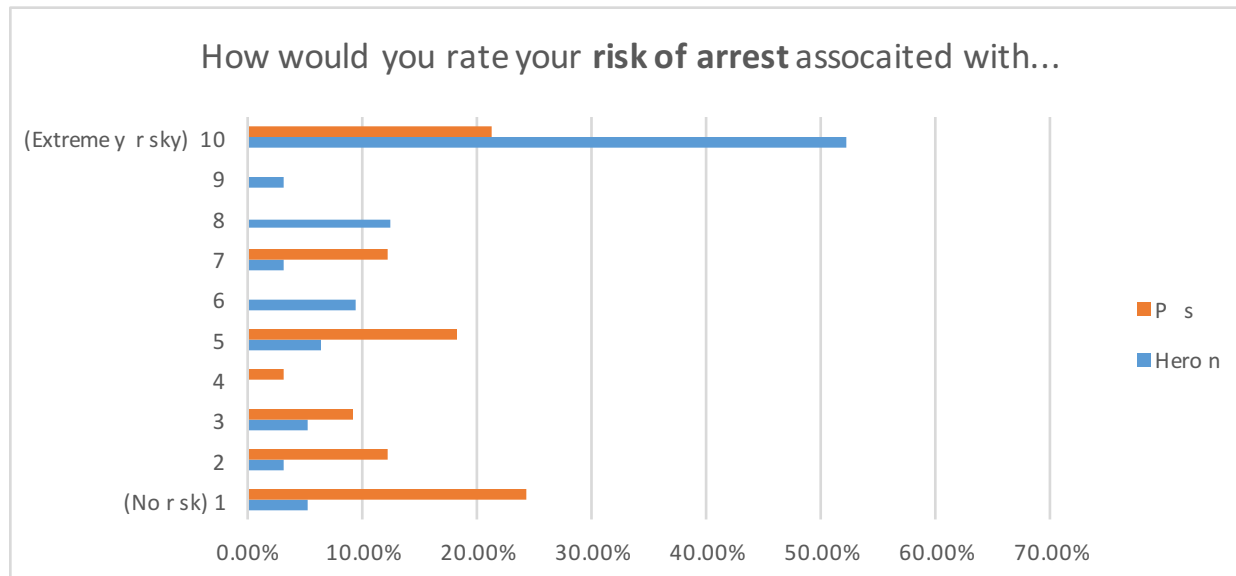
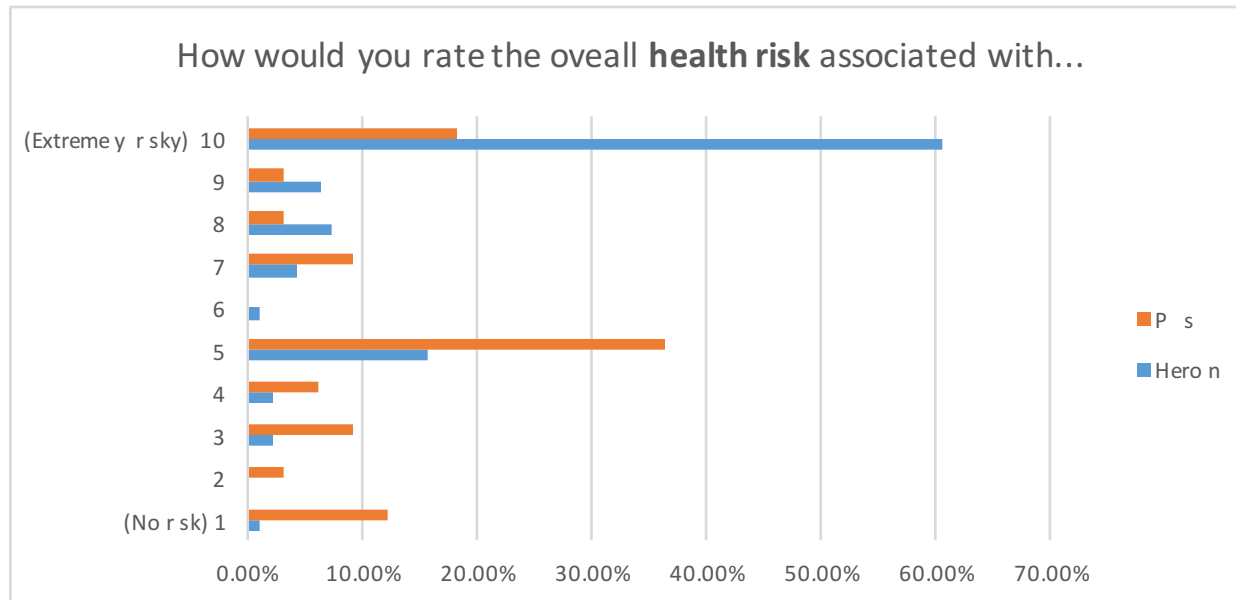
What is different about the current trend in heroin use?

But heroin is not equal to Rx opiates:

- Heroin potency is variable (Heroin can be much more potent than all but the most powerful Rx opiates)
- Heroin is not a medicine it is an illegal drug
- Heroin sales are unregulated

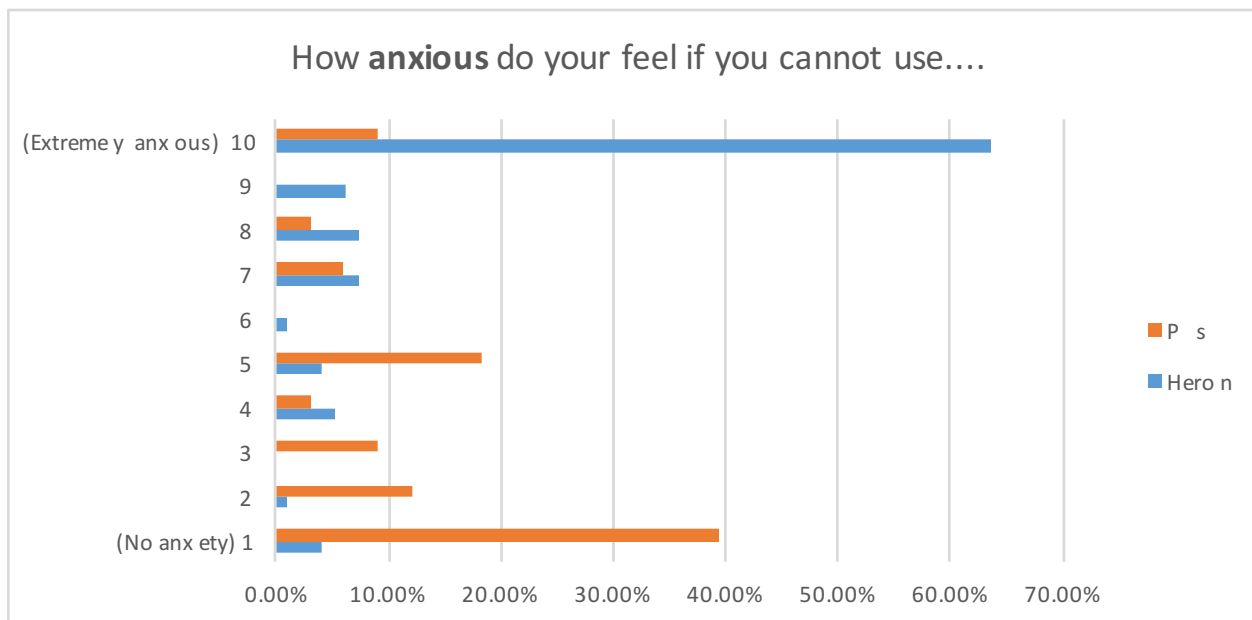
E.g., Dealers competing for market share are mixing heroin & Fentanyl (users always searching for the “killer dope”)

Heroin vs. Rx Opiates

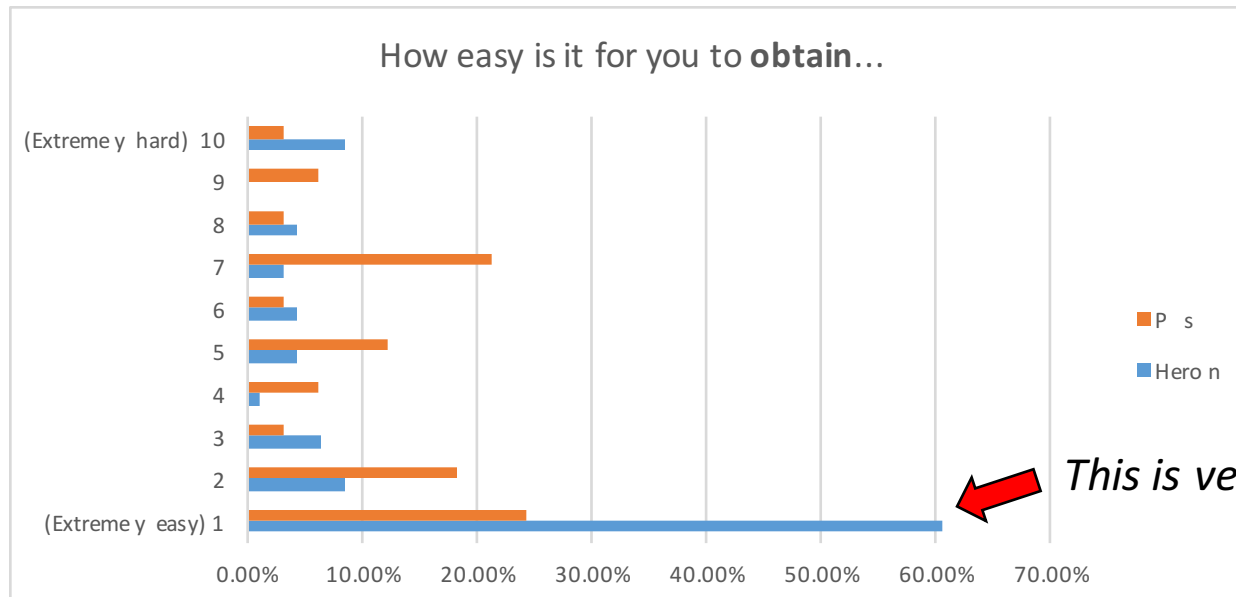
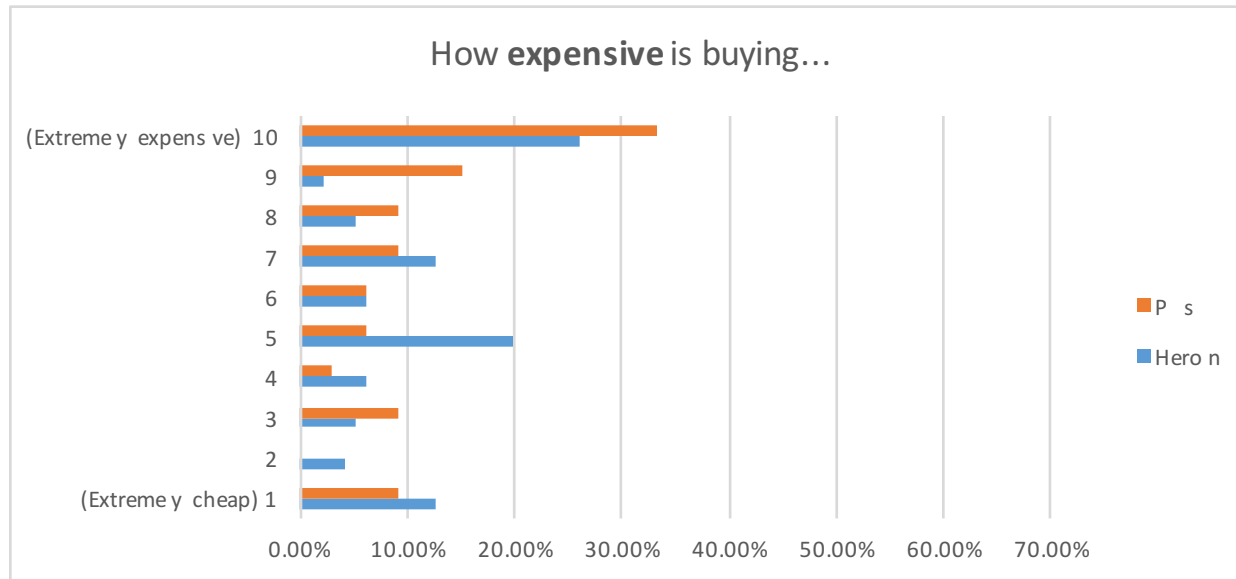


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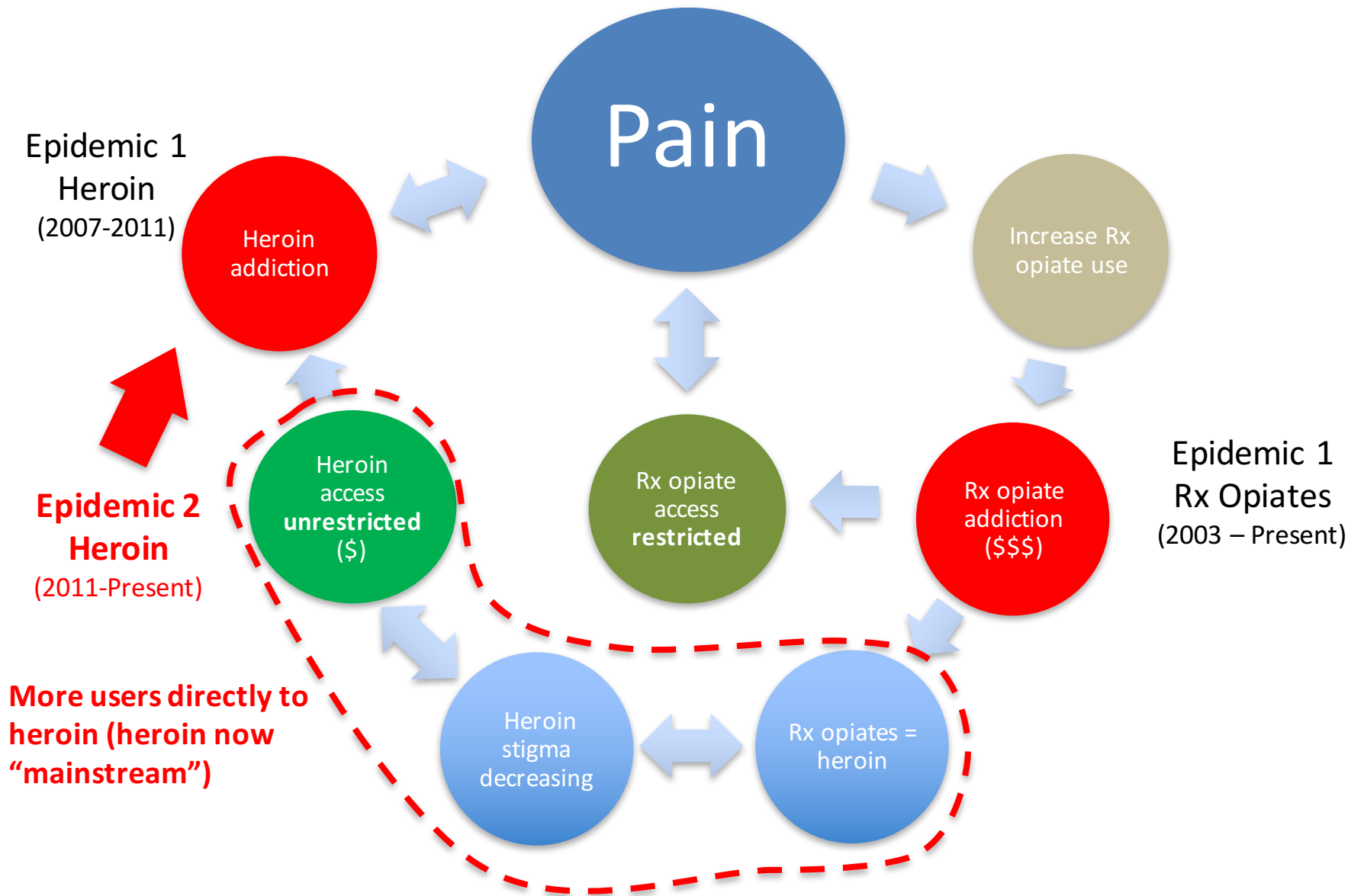
Heroin vs. Rx Opiates

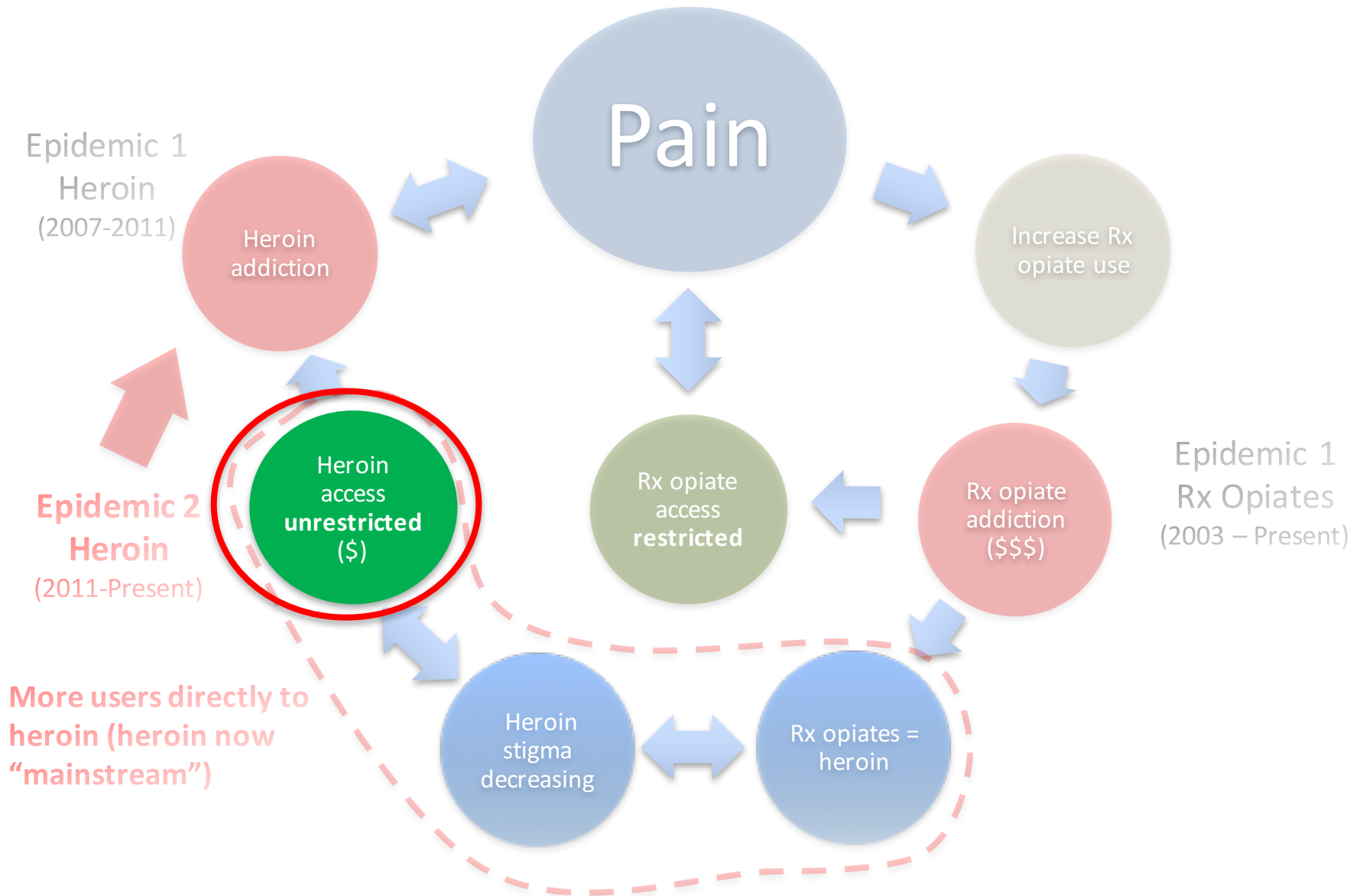


Heroin vs. Rx Opiates



N=97





What is different about the current trend in heroin use?

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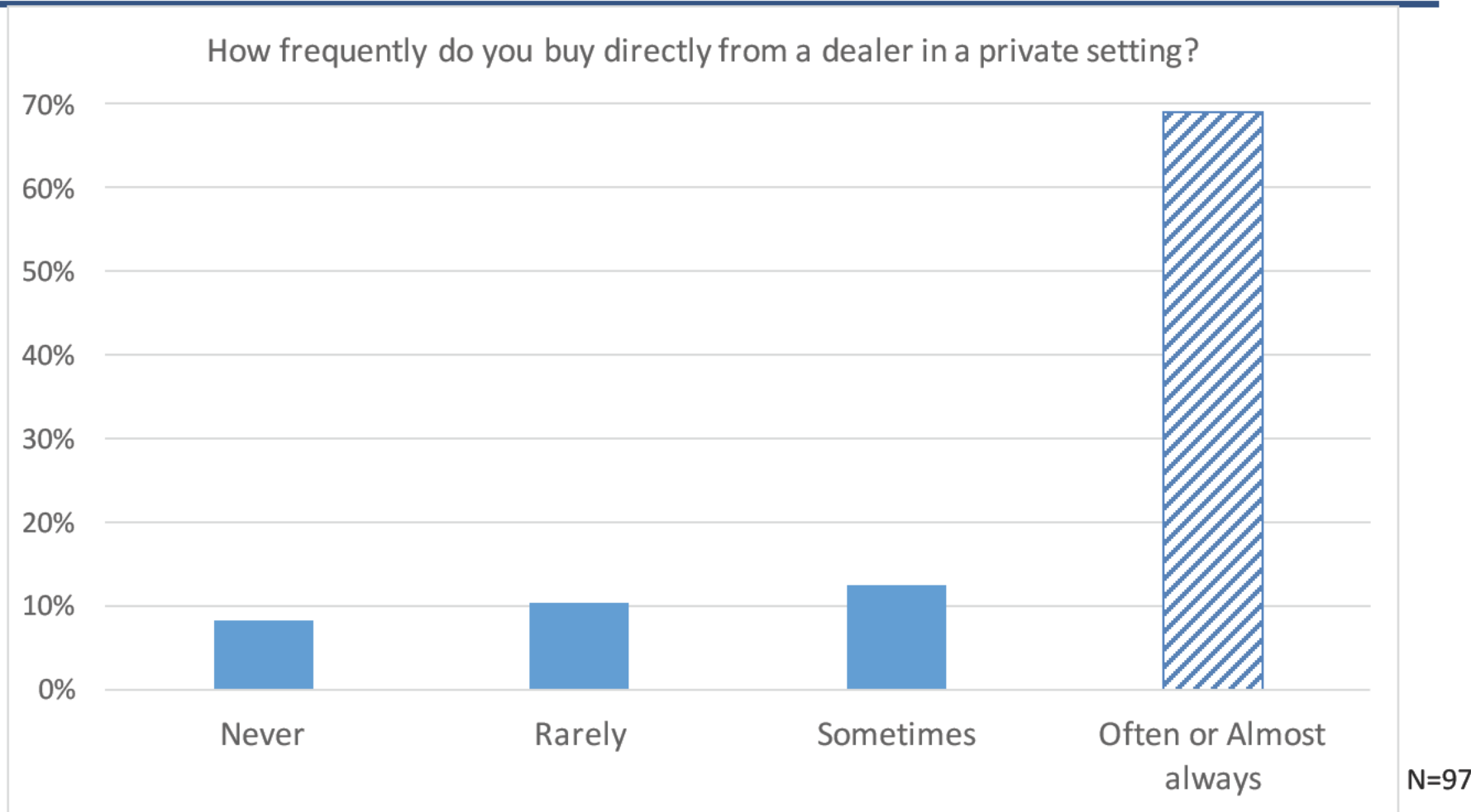
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How do people connect to the heroin market?

- Historically, we assume access to illegal drugs occurs via “open-air” drug markets (located in bad neighborhoods)
 - But these spaces: 1) no longer exist in most cities, 2) never existed in many towns / rural / suburban areas, & 3) are only the most obvious venue (obvious to the police too)
 - Users almost **NEVER** initially connect to the heroin market in these spaces... **why? Because they don't have to!**

How do people connect to the heroin market?



How do people connect to the heroin market?

Dealer



**How do customers connect
with dealers?**

Customer 1



Transactions in heroin markets

Dealer



Customer 1



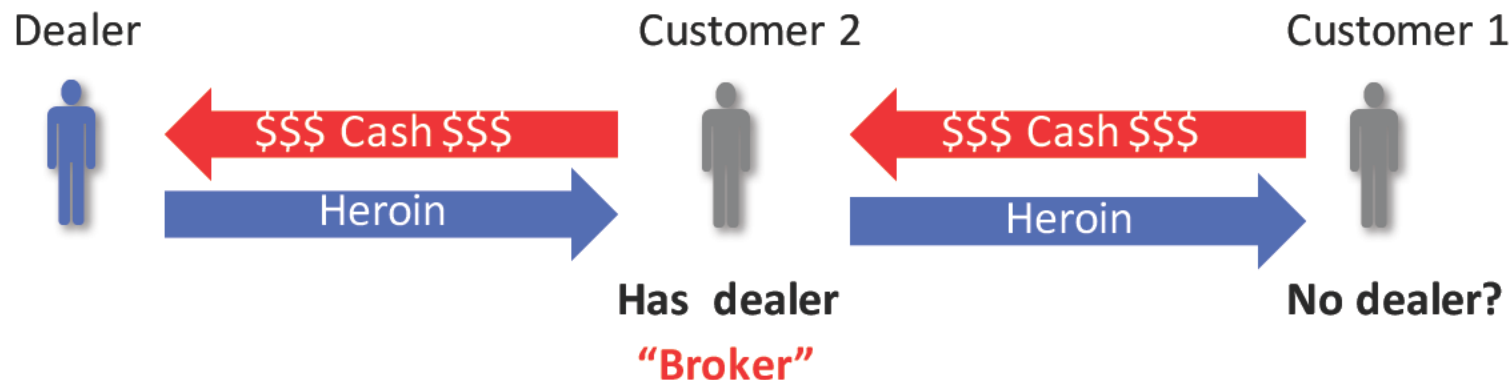
- ✓ The conventional understanding
- ✓ Only accounts for approx. 1/3 of all sales¹⁻²
 - Dealers desire to remain hidden

[1] Needle, H.R., Mills, A.R.: Drug Procurement Practices of the Out-of-Treatment Chronic Drug Abuser, National Institute on Drug Abuse, NIH Publication No. 94-3820 (1994)

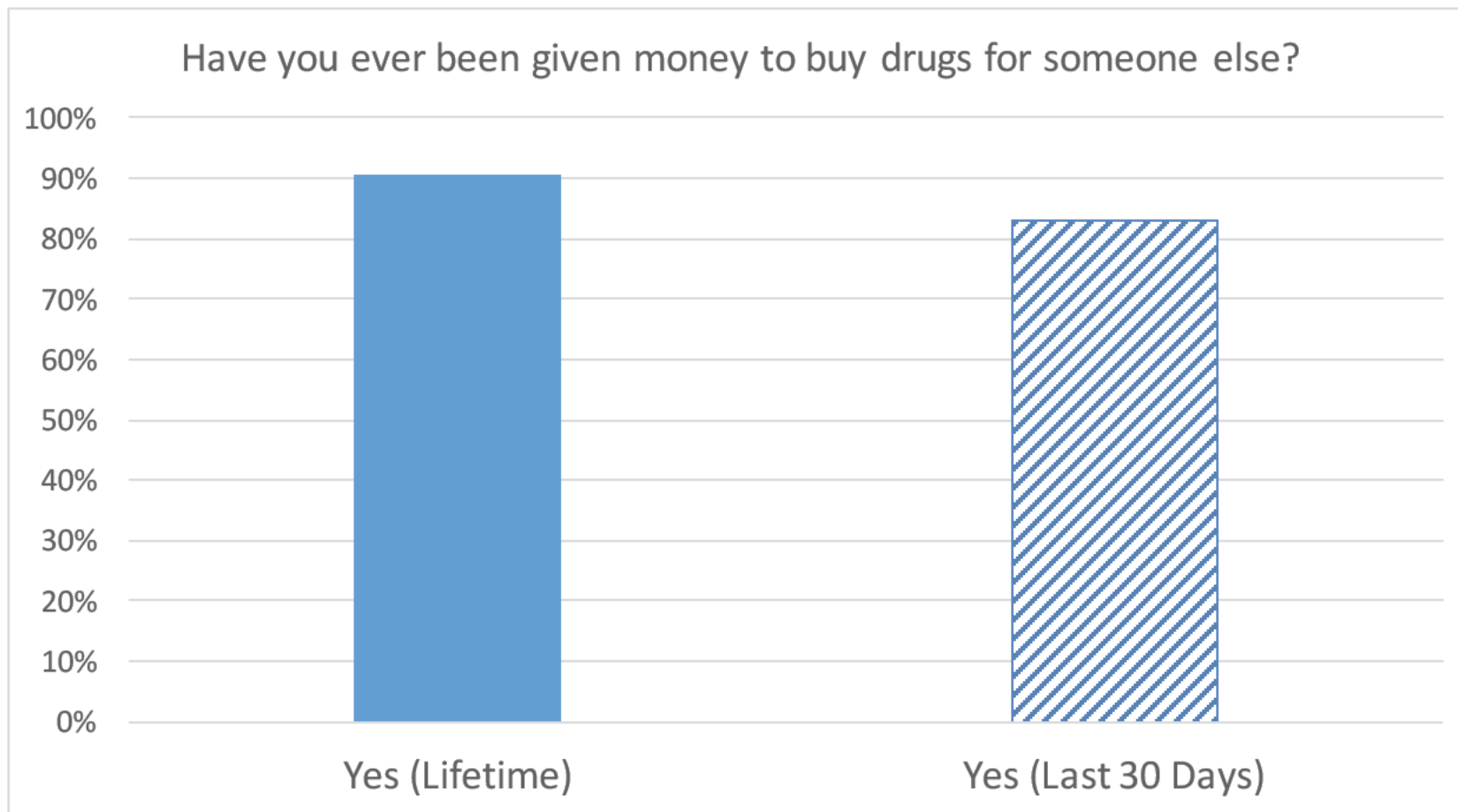
[2] Johnson, B.D., Goldstein, P.J., Preble, E. et al.: Taking Care of Business: The Economics of Crime by Heroin Abusers, Lexington Books, Lexington, MA (1985)

How do people connect to the heroin market?

- Users (initially) acquire heroin through the people they know, & **not heroin dealers**
- ✓ These intermediated (brokered) transactions are very important to heroin users...



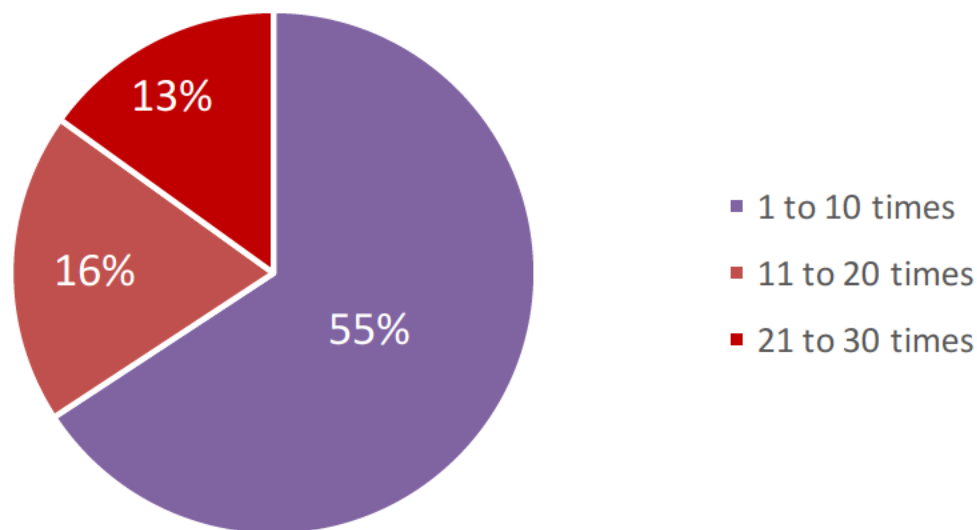
Transactions in heroin markets



N=97

Transactions in heroin markets

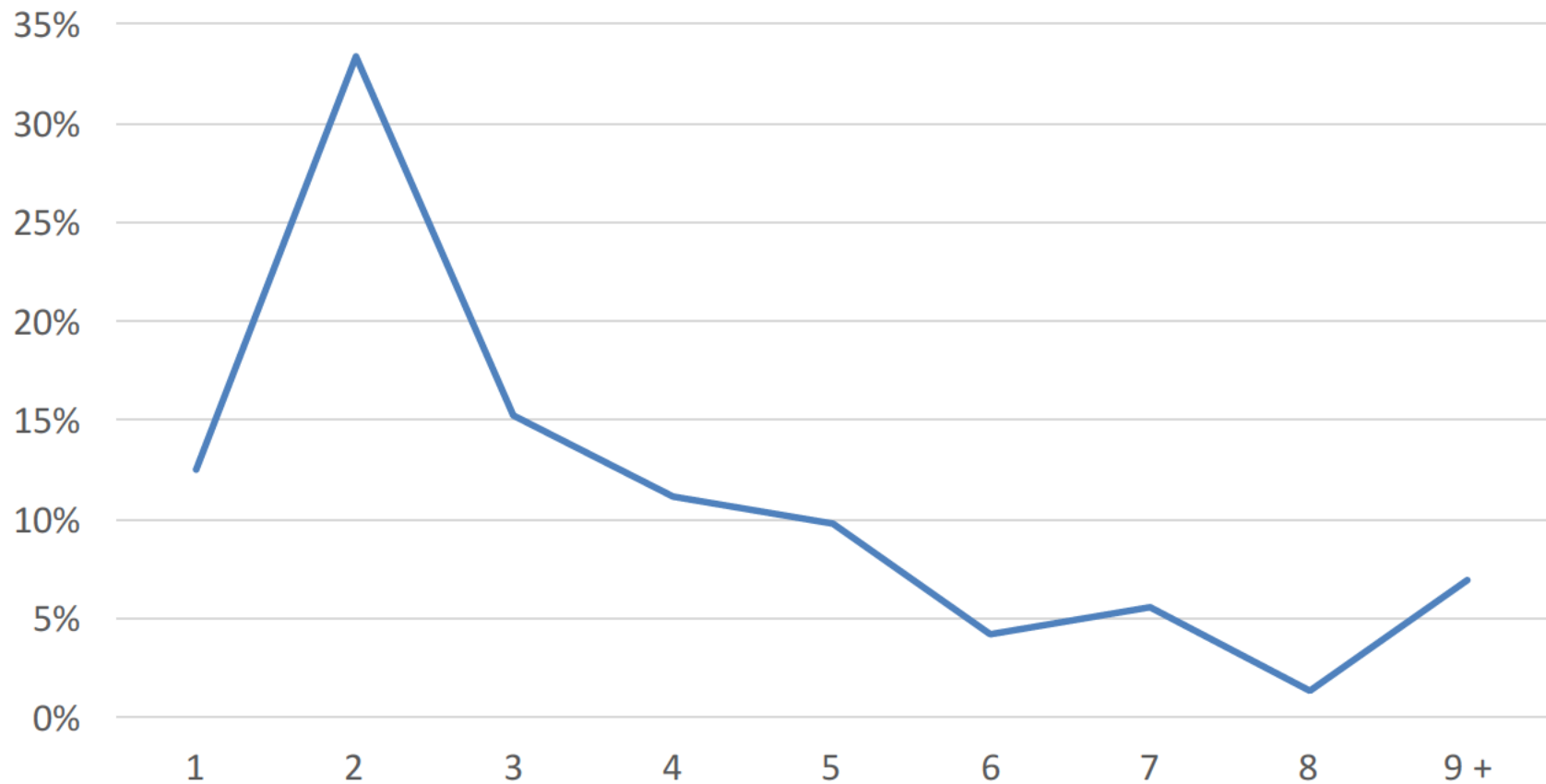
In the last 30 days, how many times have you bought drugs for someone?



N=97

Transactions in heroin markets

In the last 30 days, how many different people have you bought for?

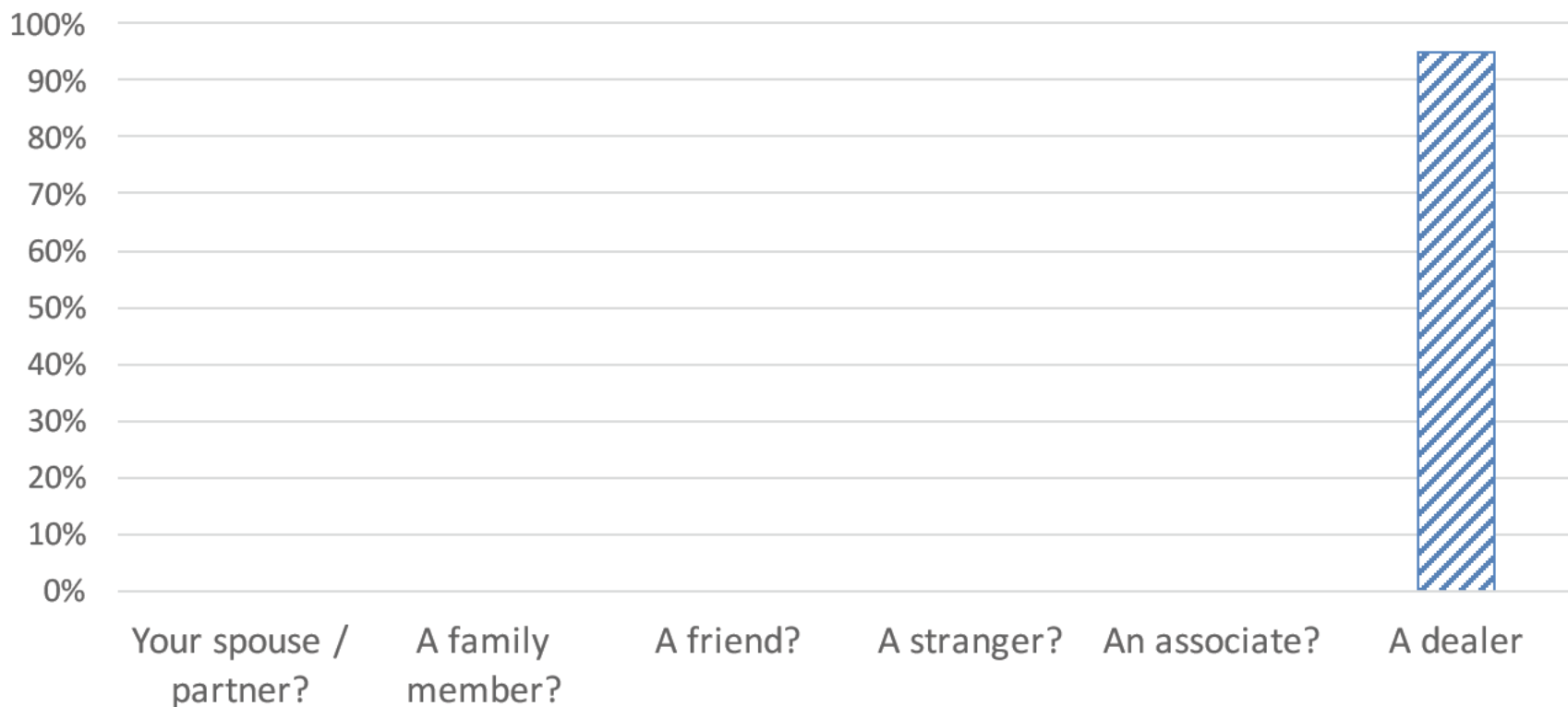


N=97

Transactions in heroin markets

- 77% of sample buys drugs (heroin) every day

In the last 30 days, have you gotten drugs from...

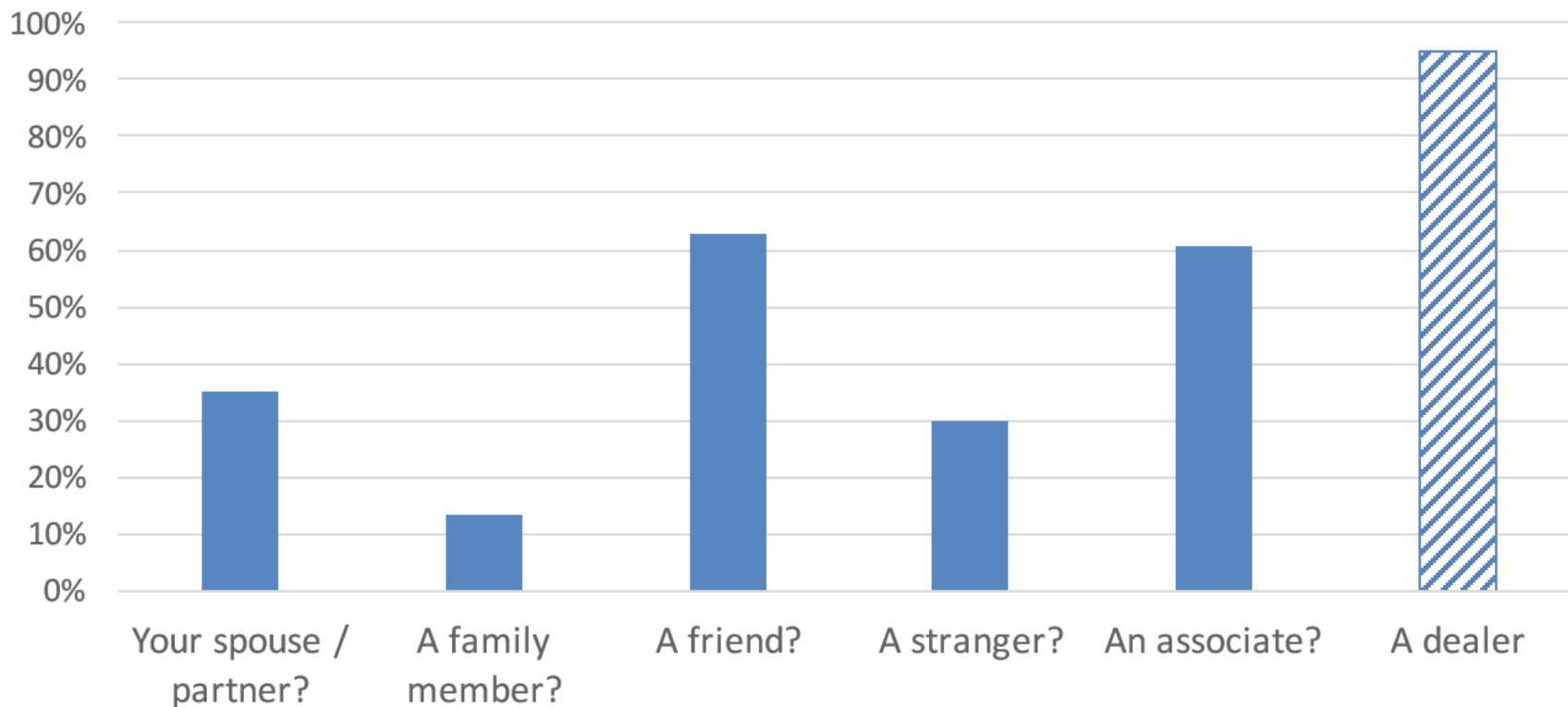


N=97

Transactions in heroin markets

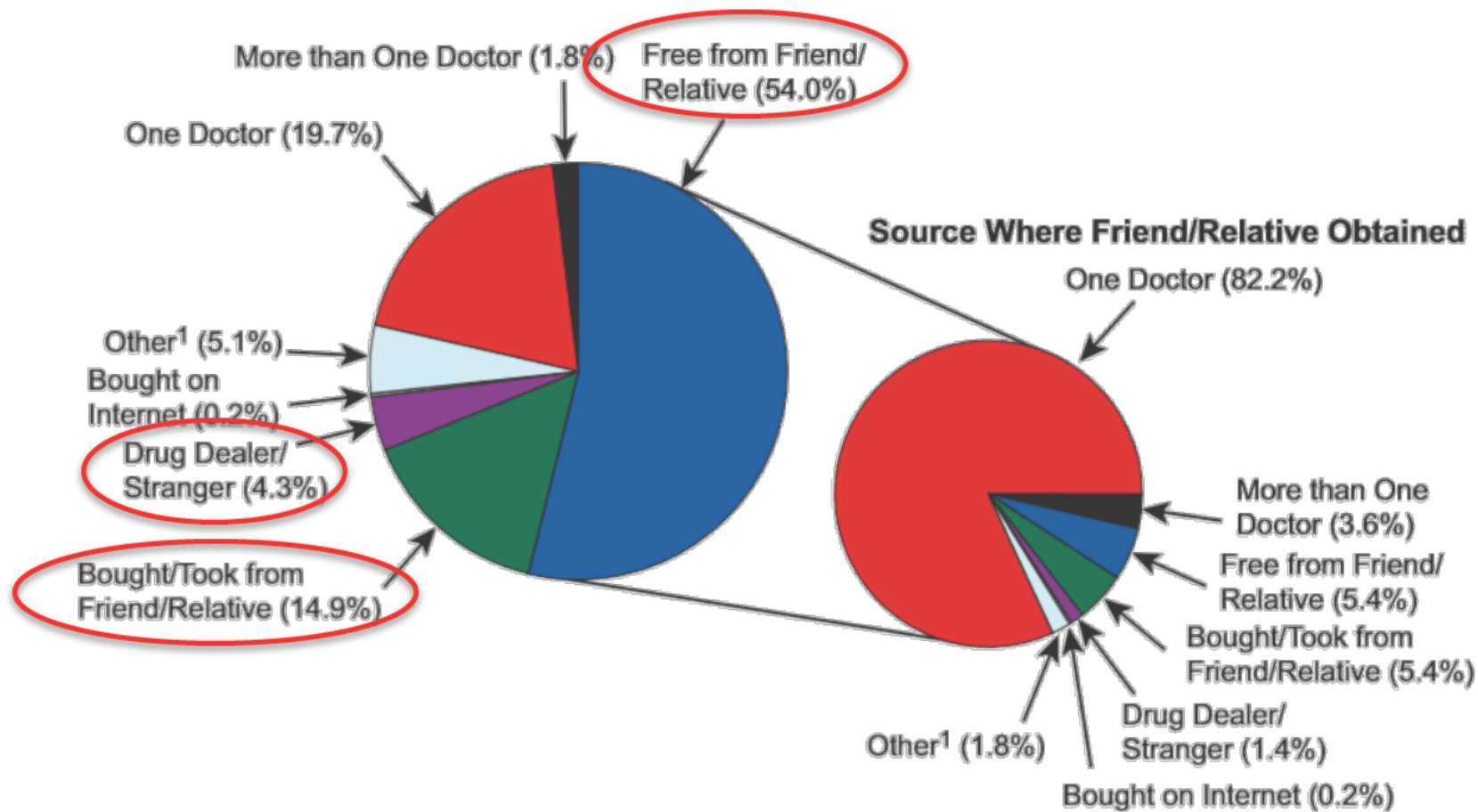
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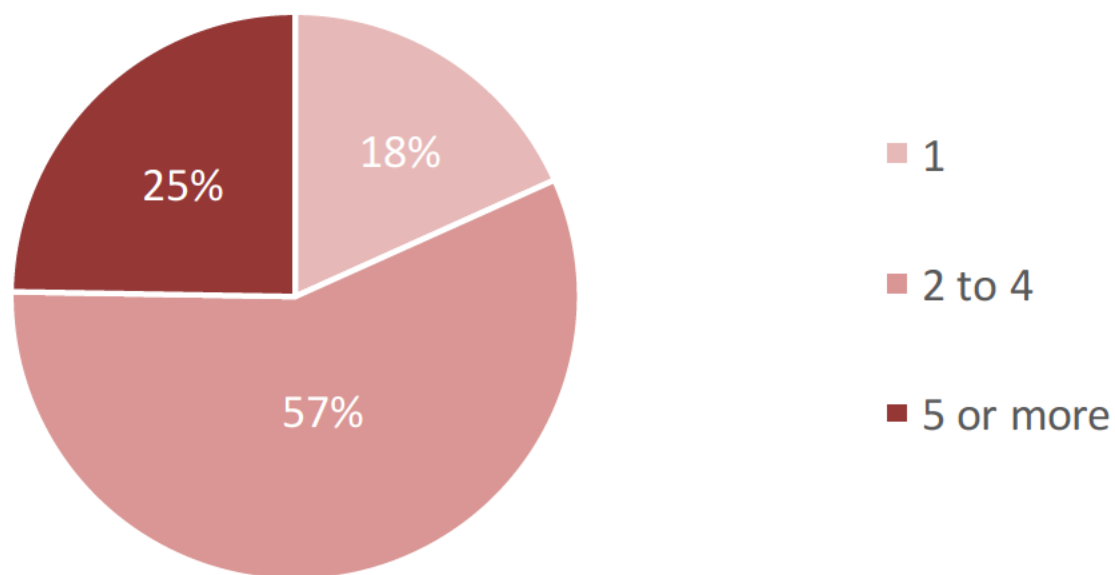
N=97

National Survey in Drug Use and Health (NSDUH 2011):
Sources Where Pain Relievers Were Obtained? (N=70,109)



Transactions in heroin markets

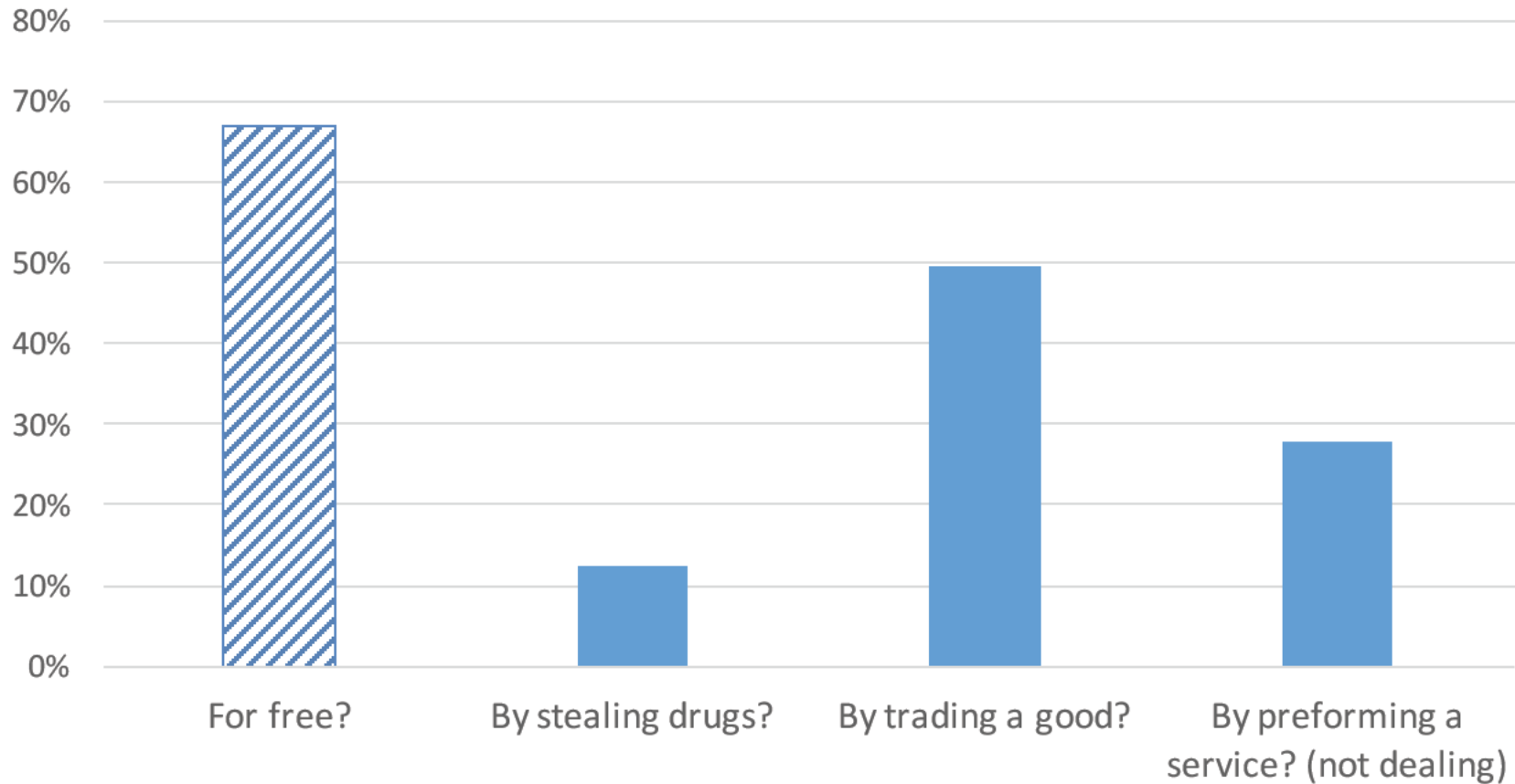
In the last 30-days, how many different people did you buy from?



N=97

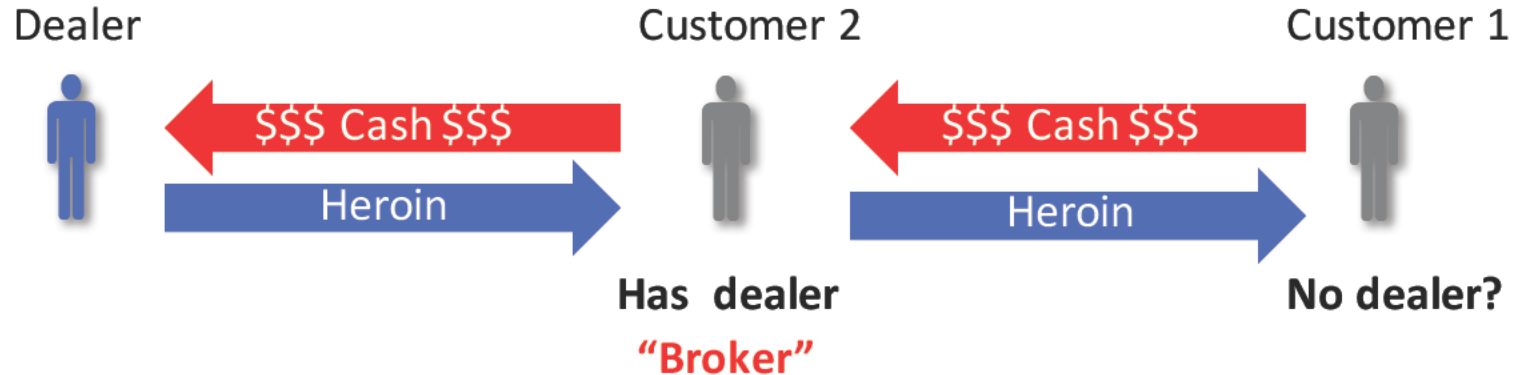
Transactions in heroin markets

In the last 30 days, did you ever get drugs...



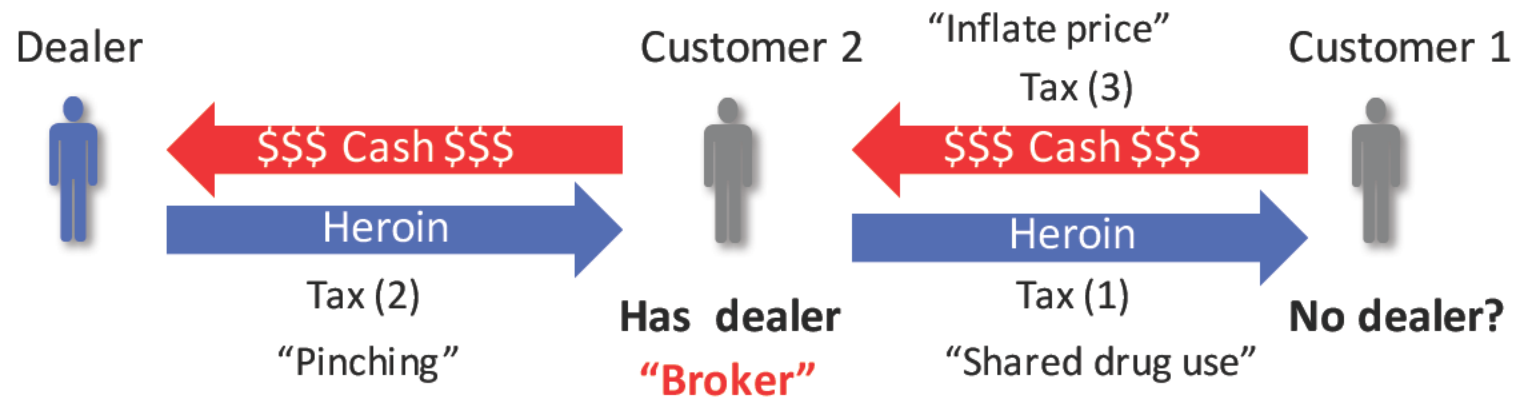
N=97

Transactions in heroin markets



- ✓ Brokered sales are common (a.k.a. "copping drugs for others")
 - Recognized in the literature since the 1960's
 - 100% of our sample participated in this type of exchange
 - **Why is this a popular form of exchange?**

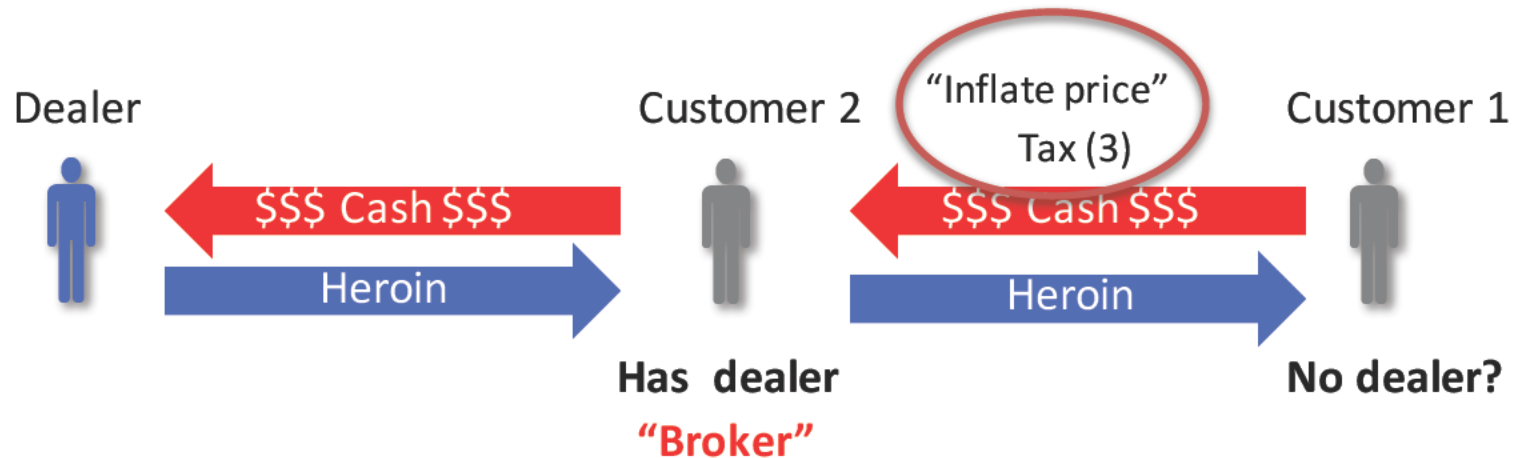
Transactions in heroin markets



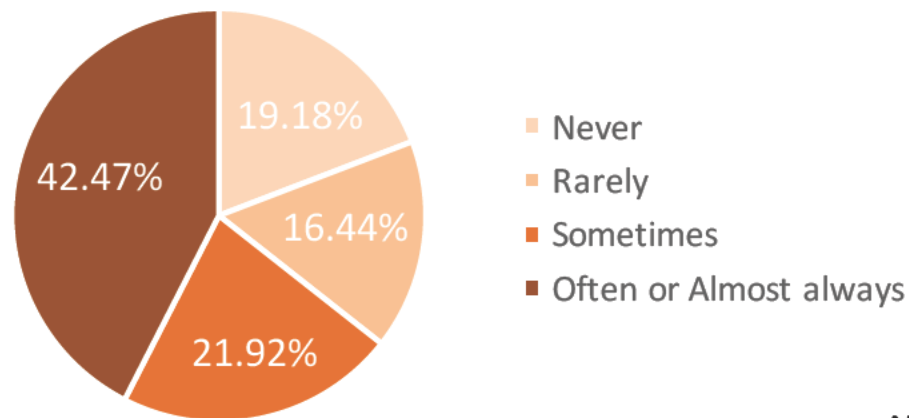
The broker can profit...

1. Brokered sales require "shared" drug use **(80% use together)**
2. The broker can also "pinch" (i.e., take) drug out of the package purchased
3. The broker can "inflate" the price to the buyer – occurs if "customer 1" is believed to have enough money OR is unfamiliar w/ market

Transactions in heroin markets

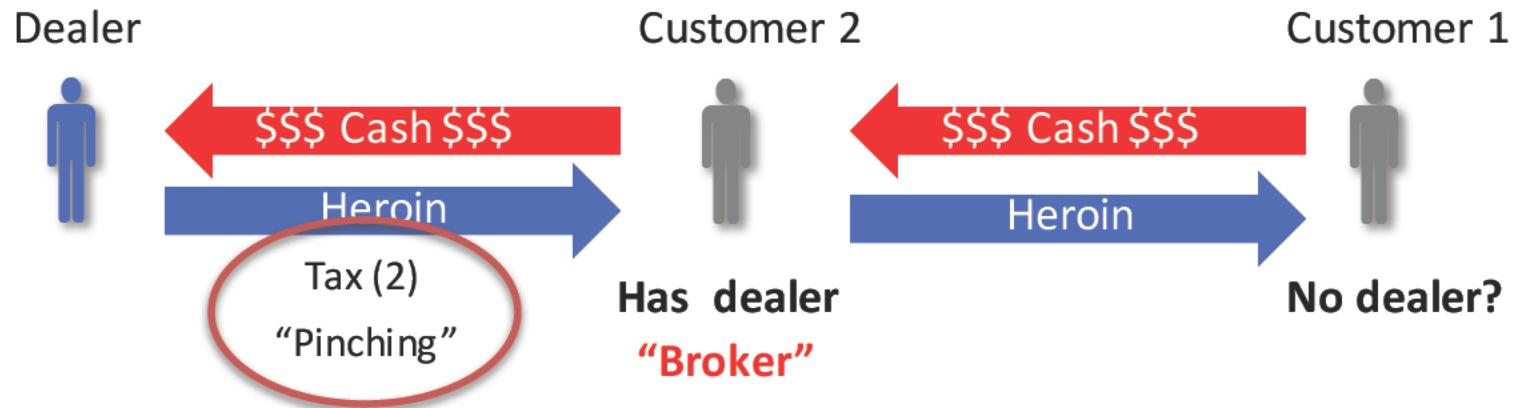


How frequently do you charge the buyer **more** than what you buy the drug for?



N=97

Transactions in heroin markets

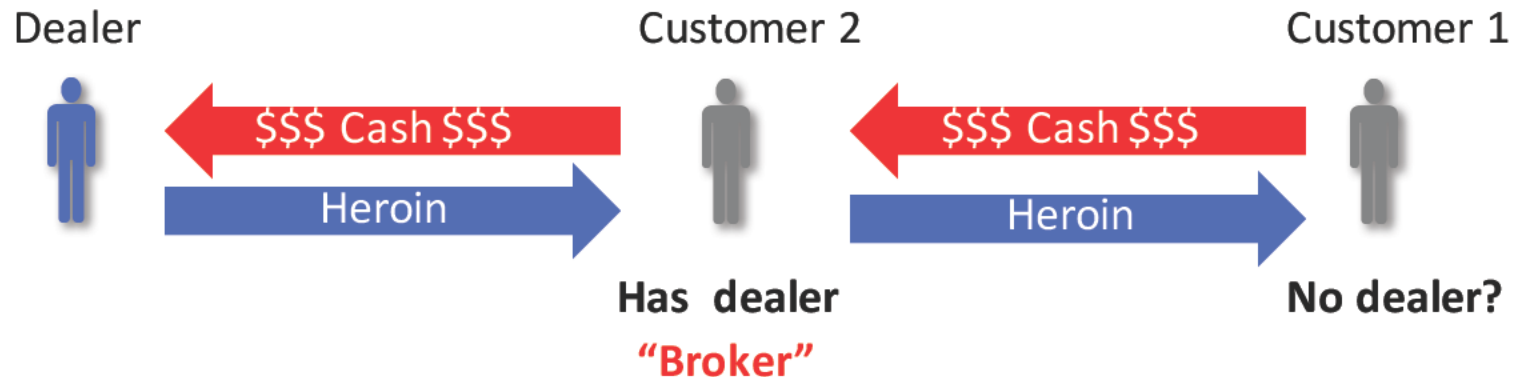


How frequently do you **take some of the drug** before returning it to the buyer? (i.e., Pinching)



N=97

Transactions in heroin markets



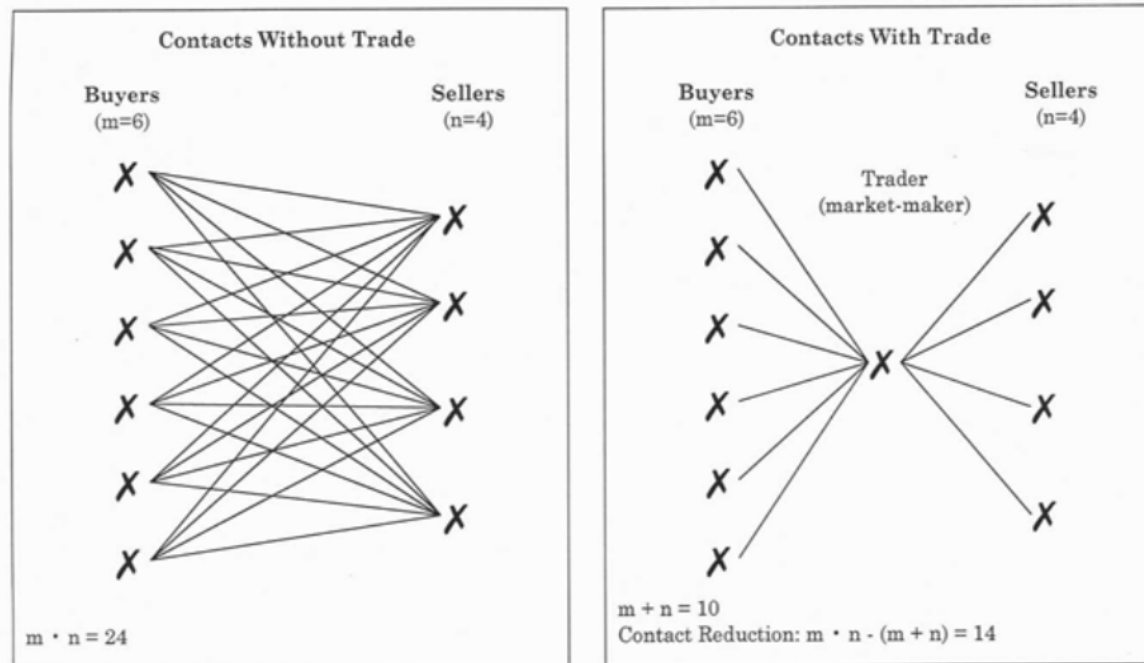
Customer 1: $P = \$A + \text{Tax 1} + \text{Tax 2} + \text{Tax 3}$

Customer 2: $P = \$0$ (+ Tax 1 + Tax 2 + Tax 3)

Brokering redistributes wealth—
from customers w/o dealers who have \$
to customers w/ dealers who have no \$

Transactions in heroin markets

The Reduction of Necessary Contacts through Intermediation: The Baligh-Richartz Effect



See: Baligh, H. H. and Richartz, L. E. *Vertical Market Structures*. Boston: Allyn & Bacon, 1967, pp. 19 ff., 93 ff., 113.
Wigand, R. T. *Electronic Commerce: Definition, Theory and Context*. The Information Society, 1997, 13, pp. 1-18.

Rolf Wigand, University of Arkansas at Little Rock

✓ E.g., Store-based vs. Internet shopping

Why is brokering important to heroin markets?

- 1. Through these types of relationships, heroin users connect & come to rely on other heroin users**
 - Re-configuring of social relationships (E.g., Who is important to heroin users? Other heroin users)
 - “New” users are indoctrinated into a new social identity
 - Social connections = connections to the market

Why is brokering important to heroin markets?

2. The heroin market is now a “social network” & NOT a person, location, place, or geography

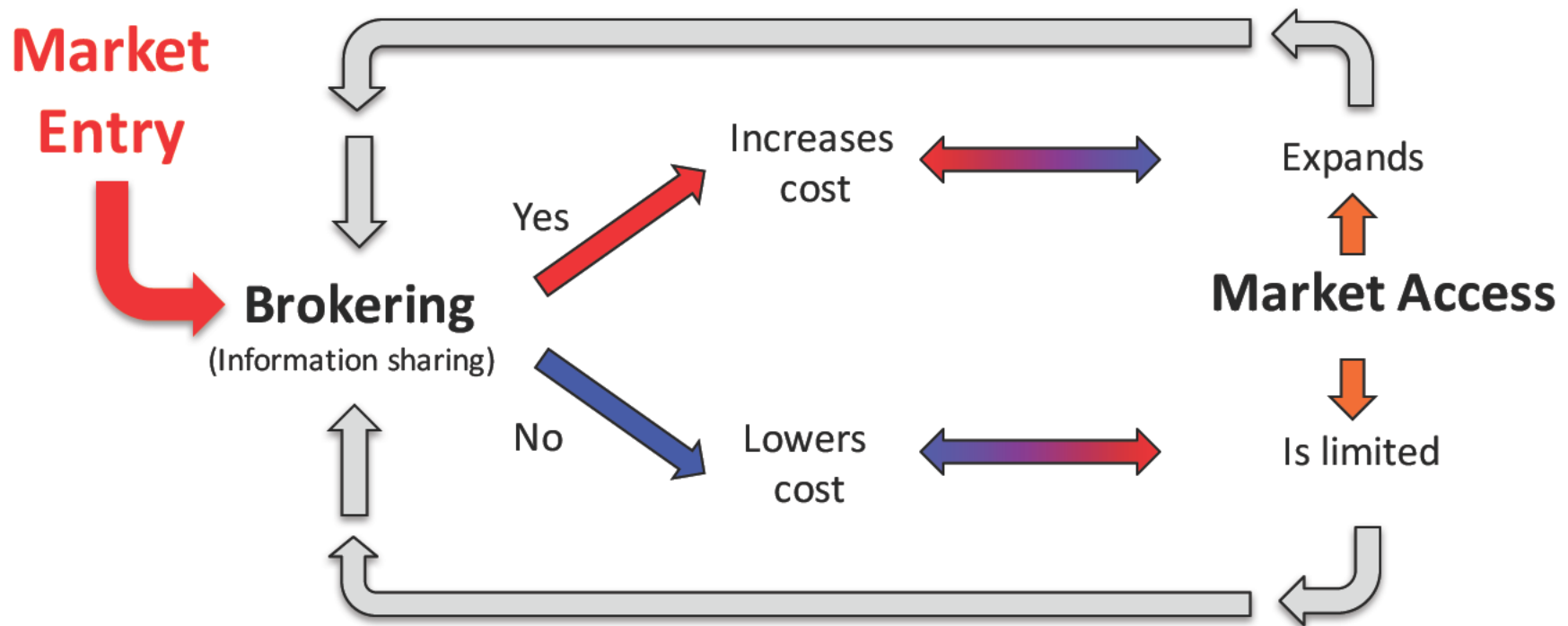
- Individual dealers become less important
- The market is now transportable, adaptable, & can exist anywhere
- The market becomes impossible to effectively disrupt

Why is brokering important to heroin markets?

3. Demand signaling within heroin market can be modeled via brokering

- New users must “connect” to the market before they can buy heroin
- Connections are a direct measure of demand & not a proxy
- *The frequency of brokering is a potential early indicator of market movement (data)*

The “Trend” Model – Feedback Framework



The “Trend” Model – Feedback Framework

The logic

- If market-entry (i.e., signaling demand) requires brokering *then* increases in brokering = increases in demand

The caveat

- Brokering can signal other types of non-demand oriented market activity (E.g., law enforcement pressure, market supply or other organizational / structural changes)

The solution (to predict demand...)

- Simulating the market (w/ brokering) & increase demand, we can then learn the level of brokering required for demand conditions

Conclusion

- ✓ Brokering provides an opportunity to model demand for heroin (potentially other drugs too)
- ✓ We are currently constructing a simulation that incorporates the dynamics presented & data collected from users

Acknowledgments

Allison Schlosser

CWRU Research Team, graduate student

Kelley Kampman

CWRU Research Team, graduate student

National Institute on Drug Abuse:	DA06016, DA019476
National Science Foundation:	BCS-0951501

Website: case.edu/artsci/anth/Hoffer.html

THANK YOU